JUNCTION QUICK STOP (PWSNO 1280275)
SOURCE WATER ASSESSMENT REPORT

January 14, 2003

State of Idaho
Department of Environmental Quality

SOURCE WATER ASSESSMENT FOR JUNCTION QUICK STOP

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Junction Quick Stop, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Junction Quick Stop* describes factors used to assess the susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Junction Quick Stop is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Well Construction. The Junction Quick Stop water system serves a convenience store and mobile home located about 0.3 miles south of the junction between Interstate 90 and State Highway 3 near Rose Lake, Idaho. A 110-foot deep well that was drilled in 1983 provides drinking water for the system.

The 6-inch steel well casing extends from 30 inches above ground surface to a depth of 93 feet where it terminates in a water-bearing shale stratum. The casing is fitted with a watertight well cap that was in need of repair when the system was inspected in March 2002. The well log for Junction Quick Stop indicates that the well was sealed with puddling clay, but does not document the seal depth. The static water level is 9 feet below the surface. With the pump set 89 feet below the surface, the well produced 12 gallons per minute when it was tested at the time it was drilled. The well is in the 100-year flood plain for Fourth of July Creek.

Well Site Characteristics. Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineated for your well. Soils covering about 56 per cent of the well recharge zone for the Junction Quick Stop well are classed as moderately well drained to well drained. At the well site, clay predominates in the soil column. Water was first encountered in a broken shale layer 6 to 11 feet below the surface. 73 feet of clay form an aquitard that helps protect the deeper water table found from 91 to 110 feet below the surface from vertical transport of contaminants.

Potential Contaminant Inventory. The 1000-foot radius recharge zone delineated for the Junction Quick Stop well covers a wooded area with some commercial development fronting Highway 3. As a trucking route, the highway is a potential source of every class of regulated contaminants. The well is located in a parking area at the northwest corner of the Junction Quick Stop property, only 30 feet east the highway right of way and about 23 feet south of the property line. The system applied for a waiver of the required 50-foot separation distance from the well to the property lines in 1999.

Other potential sources of contamination inside the delineation boundaries are the gas station about 900 feet north of the well, Fourth of July Creek, about 600 feet east of the well, and the fuel storage tank for Junction Quick Stop.

Water Quality History. In the period from March 1999 through April 2002, one water sample from Junction Quick Stop tested positive for total coliform bacteria. Follow up tests were negative. Annual nitrate tests show concentrations ranging from undetectable levels to 0.624 mg/l. The Maximum Contaminant Level for nitrate is 10 mg/l. The system failed to monitor as required during several reporting periods.

Susceptibility to Contamination. An analysis of the Junction Quick Stop well, incorporating information from the public water system file, well log, and the potential contaminant inventory, ranked the well moderately susceptible to all classes of regulated contaminants. Risk factors related to local geology added the most points to the final susceptibility scores. The complete analysis worksheet for your well is on page 6 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of the worksheet.

Source Water Protection. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Operating and maintaining the well in full compliance with *Idaho Rules for Public Drinking Water Systems* is the most important drinking water protection tool available to Junction Quick Stop. Regular water quality testing provides an indicator for problems with the well. Maintaining the integrity of the wellhead seal is the first line of defense against contamination. It might be helpful to develop a written testing and maintenance schedule so that important tasks are performed in a timely manner.

With the well only 30 feet from the right of way, a collision or spill on Highway 3 is the next greatest threat to the well. Several large posts placed around the wellhead provide some protection from collision damage. The area around the well should be checked periodically to ensure that drainage from the highway and parking area are diverted away from the well. The system should consider fencing the area around the well to keep parked vehicles as far away as practicable, and to protect the well from unauthorized access.

There are a number of other voluntary measures the system can implement as well. Every system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website (http:// www.deq.state.id.us/water/water1.htm) to guide systems through the emergency planning process.

Drinking water protection partnerships with landowners and other businesses in the recharge zone should also be established. Some of them may not be aware that their property is in a sensitive area where household or business practices could have a negative impact on public drinking water supplies. The Junction Quick Stop should investigate ground water stewardship programs like Home*A*Syst. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include petroleum product storage, septic system maintenance, handling and storing lawn and household chemicals and similar activities. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

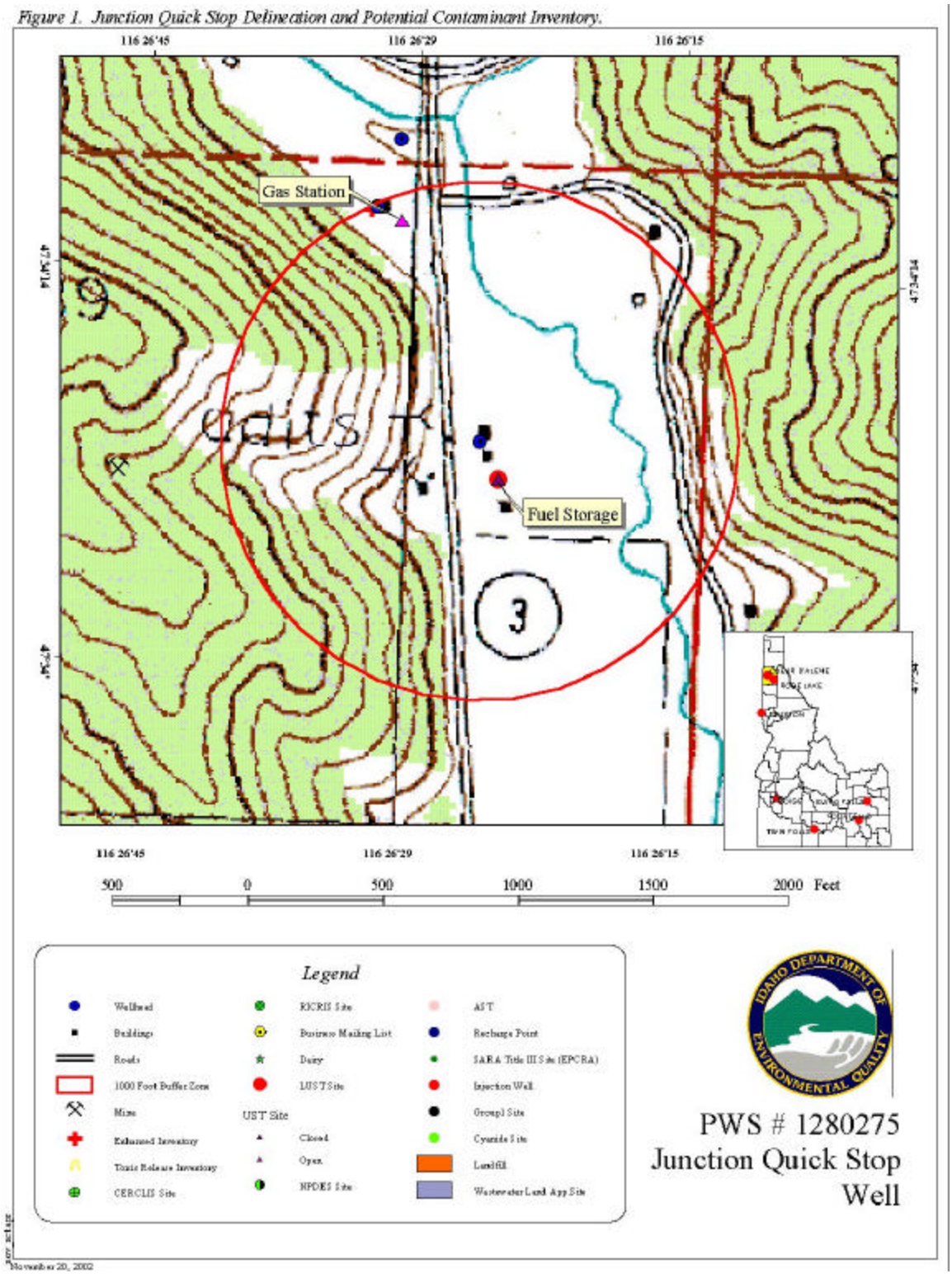
Assistance. Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

Website: http:// www.deq.state.id.us/water/water1.htm

Figure 1. Junction Quick Stop Delineation and Potential Contaminant Inventory.



Ground Water Susceptibility

Public Water System Name : **JUNCTION QUICK STOP** Well : **WELL 1**

Public Water System Number : **1280275** 11/20/02 11:20:32 AM

1. System Construction		SCORE			
Drill Date	9/26/83				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 2002				
Well meets IDWR construction standards	UNKNOWN	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	CASING YES, SEAL UNKNOWN	1			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	NO	1			
Total System Construction Score		**5**			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		**3**			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A		Score	Score	Score	Score
Land Use	RURAL	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score		**0**	**0**	**0**	**0**
Potential Contaminant / Land Use - 1000-Foot Radius					
Contaminant sources present (Number of Sources)	YES	1	3	3	2
(Score = # Sources X 2) 8 Points Maximum		2	6	6	4
Sources of Class II or III leacheable contaminants or Microbials	YES	1	3	3	
4 Points Maximum		1	3	3	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius		**3**	**9**	**9**	**4**
Cumulative Potential Contaminant / Land Use Score		**3**	**9**	**9**	**4**
4. Final Susceptibility Source Score		**9**	**10**	**10**	**10**
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

0 - 5 Low Susceptibility
6 - 12 Moderate Susceptibility
> 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.